

What I claim is:

1. A filter material having a composition comprising,
a fused mixture of particulate of predetermined sizes of powder ultra high molecular weight polyethylene, low density polyethylene, and high density polyethylene,
5 said material having evenly distributed interstice openings of substantially equal size and extending from one surface to an opposite surface.

2. A filter material composition according to Claim 1 including particulate of filler material powder chosen from the group consisting of : active carbon, polytetrafluoroethylene, salt, and an alkaline.

10 3. A filter material composition according to Claim 2 having
1 portion in proportion by volume of ultra high molecular weight polyethylene powder having a particulate size of 10 to 15 micrometer,
0.15 to 0.4 portion in proportion by volume of low density polyethylene powder having a particulate size of 0.15 to 0.4 micrometer,
15 0.05 to 0.15 portion in proportion by volume of high density polyethylene powder having a particulate size of 10 to 15 micrometer, and
2.5 to 4.0 portion in proportion by volume of active carbon powder having a particulate size of approximately 20 micrometer.

4. A filter material composition according to Claim 2 having
20 1 portion of in proportion by volume of ultra high molecular weight polyethylene powder having a particulate size of approximately 10 micrometer,
0.1 to 0.2 portion in proportion by volume of polytetrafluoroethylene powder having a

particulate size of approximately 15 micrometer,

0.05 to 0.1 portion in proportion by volume of high density polyethylene powder having a particulate size of approximately 15 micrometer,

5 0.03 to 0.08 portion in proportion by volume of low density polyethylene powder having a particulate size of approximately 15 micrometer,

0.05 to 0.1 portion in proportion by volume of alkaline powder having a particulate size of approximately 10 micrometer, and

0.1 to 0.2 portion in proportion by volume of polyphenylene oxide powder having a particulate size of approximately 15 micrometer.

10 5. A filter material composition according to Claim 2 having

1 portion in proportion by volume of ultra high molecular weight polyethylene powder having a particulate size of 20 to 30 micrometer,

0.10 to 0.20 portion in proportion by volume of high density polyethylene powder having a particulate size of approximately 25 micrometer,

15 0.03 to 0.08 portion in proportion by volume of low density polyethylene powder having a particulate size of approximately 25 micrometer,

0.05 to 0.15 portion in proportion by volume of polytetrafluoroethylene powder having a particulate size of approximately 25 micrometer,

20 0.05 to 0.15 portion in proportion by volume of polyamide powder having a particulate size of approximately 25 micrometer,

0.15 to 0.3 portion in proportion by volume of alkaline powder having a particulate size of approximately 20 micrometer, and

0.10 to 0.25 portion in proportion by volume of salt powder having a particulate size of approximately 25 micrometer.

6. A filter material composition according to Claim 2 having

1 portion in proportion by volume of ultra high molecular weight polyethylene powder
5 having a particulate size of approximately 40 micrometer,

0.10 to 0.2 portion in proportion by volume of high density polyethylene having a
particulate size of approximately 40 micrometer,

0.03 to 0.08 portion in proportion by volume of low density polyethylene having a
particulate size of approximately 40 micrometer,

10 0.05 to 0.15 portion in proportion by volume of polypropylene powder having a
particulate size of approximately 40 micrometer,

0.05 to 0.15 portion in proportion by volume of polyamide powder having a particulate
size of approximately 40 micrometer,

15 0.15 to 0.3 portion in proportion by volume of alkaline powder having a particulate size
of approximately 20 micrometer, and

0.10 to 0.25 portion in proportion by volume of salt powder having a particulate size of
approximately 40 micrometer.

7. A filter material composition according to Claim 2 having

1 portion in proportion by volume of ultra high molecular weight polyethylene powder
20 having a particulate size of approximately 25 micrometer,

0.10 to 0.25 portion in proportion by volume of high density polyethylene powder having
a particulate size of approximately 30 micrometer,

0.15 to 0.35 portion in proportion by volume of low density polyethylene powder having a particulate size of approximately 30 micrometer,

2.5 to 4.0 portion in proportion by volume of active carbon powder having a particulate size of approximately 20 micrometer, and

5 0.05 to 0.15 portion in proportion by volume of alkaline powder having a particulate size of approximately 20 micrometer.

8. A process of making a high efficiency filter material comprising the steps of:

 mixing a powder mixture of ultra high molecular weight polyethylene, high density polyethylene, low density polyethylene all having predetermined particulate sizes,

10 placing and compacting said powder mixture in a refractory mold having a predetermined molded shape,

 heating said mold in a heating oven to a temperature of 160 °C to 320 °C for 30 to 90 minutes to fuse the mixture to an elastic porous material.

9. A process according to Claim 8 including the step of removing said mold with said
15 elastic material therein from said heating oven,

 immersing said mold with said elastic material therein into a cold water bath , and
 removing said elastic material from said mold.

10. A process according to Claim 9 including immersing the elastic material in water for a further period of 2 to 4 hours.